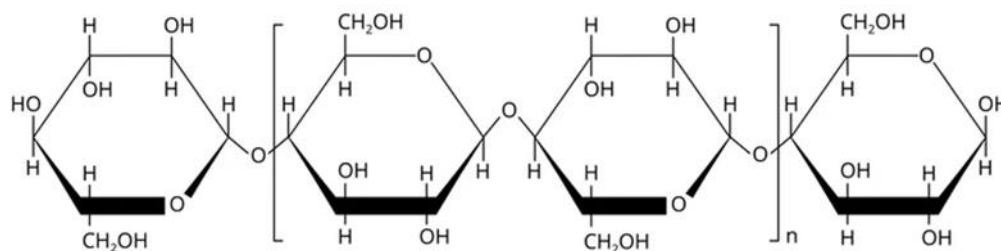
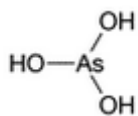


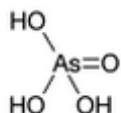
SUPPORTING INFORMATION



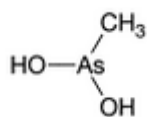
Cellulose



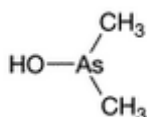
Arsenous acid (As(III))



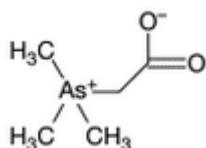
Arsenic acid (As(V))



Methylarsonous acid (MA)



Dimethylarsinous acid (DMA)



Arsenobetaine

Figure S1. Compounds involved in the LA experiments.

Table S1. Laser-induced particulate As matter from ablation of various arsenic species in different gas atmospheres, collected on a filter and fractionated into a water-soluble As fraction, an HCl-soluble As fraction, and an insoluble As fraction. Data are given as percentages of the total particulate As matter collected in Figure 2.

Sample	gas	Water soluble (%)	HCl soluble (%)	Insoluble (%)
As(0)	He	11.0 ± 4.4	21.9	67.1
As(0)	Ar/CO ₂	20.1 ± 4.2	76.6	3.3
As(0)	Ar/O ₂	20.9 ± 2.3	75.7	3.5
As(0)	O ₂	19.6 ± 1.7	77.5	2.9
As(V)	He	66.7 ± 21.5	32.0	1.3
As(V)	Ar/CO ₂	79.6 ± 6.1	20.4	nd
As(V)	Ar/O ₂	80.1 ± 17.6	19.7	0.2
As(V)	O ₂	83.5 ± 1.9	16.1	0.4
DMA	He	55.4 ± 2.7	43.3	1.3
DMA	Ar/CO ₂	79.2 ± 2.1	20.8	nd
DMA	Ar/O ₂	79.8 ± 19.7	19.8	0.4
DMA	O ₂	80.3 ± 5.7	19.4	0.3
AsB	He	75.6 ± 7.8	23.3	1.1
AsB	Ar/CO ₂	78.7 ± 10.6	21.3	nd
AsB	Ar/O ₂	81.8 ± 28.0	18.0	0.2
AsB	O ₂	80.3 ± 1.1	19.3	0.4

nd, not detected (below detection limit).

Table S2. Arsenic speciation related to the water-soluble fraction (see also Figure 3).

Sample	gas	As(III) (%)	As(V) (%)	MA (%)	DMA (%)	Missing (%)
As(0)	He	98.8 ± 10.3	1.2 ± 0.1	nd	nd	nd
As(0)	CO ₂	98.1 ± 21.3	1.9 ± 0.7	nd	nd	nd
As(0)	Ar/O ₂	81.8 ± 14.4	17.4 ± 4.9	nd	nd	0.8
As(0)	O ₂	86.6 ± 31.3	7.0 ± 0.5	nd	nd	6.4
As(V)	He	50.9 ± 14.6	7.1 ± 1.6	3.7 ± 0.4	nd	38.3
As(V)	CO ₂	50.3 ± 5.4	12.3 ± 2.6	5.9 ± 0.3	nd	31.5
As(V)	Ar/O ₂	54.3 ± 5.6	26.3 ± 2.9	2.3 ± 0.3	nd	17.1
As(V)	O ₂	69.9 ± 12.5	25.1 ± 2.6	1.4 ± 0.4	nd	3.6
DMA	He	43.2 ± 0.3	3.0 ± 1.3	6.5 ± 0.2	8.8 ± 0.6	38.5
DMA	CO ₂	41.6 ± 4.0	3.7 ± 0.8	7.9 ± 0.5	9.2 ± 0.3	37.6
DMA	Ar/O ₂	56.3 ± 9.7	23.9 ± 1.6	3.5 ± 0.6	3.2 ± 1.0	13.1
DMA	O ₂	55.8 ± 18.1	25.4 ± 7.6	3.2 ± 0.5	nd	15.6
AsB	He	25.6 ± 1.4	1.4 ± 0.2	4.1 ± 0.3	2.9 ± 1.0	66.1
AsB	CO ₂	44.1 ± 9.2	3.8 ± 1.9	6.5 ± 0.5	3.8 ± 0.3	41.9
AsB	Ar/O ₂	52.8 ± 19.2	10.2 ± 6.1	4.1 ± 1.5	1.9 ± 1.6	31.1
AsB	O ₂	71.6 ± 24.3	18.9 ± 5.4	3.7 ± 1.7	nd	5.8

nd, not detected (below detection limit).